

ABSTRACT

An improved microtool for patterning package substrates is enclosed. The microtool comprises a base portion including a pattern to pattern a substrate and an electroless nickel layer deposited over the base portion. The base portion may comprise pure nickel, a nickel alloy, or copper. The electroless nickel layer increases the hardness of the microtool, as well as improving the corrosion resistance and the lubricity of the tool. The microtool may be formed by creating a mold, activating the mold, depositing an electroless nickel layer over the mold, electroplating the base portion over the electroless nickel layer, and removing the mold.